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EXAMINER	
TAYLOR, EARL N	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,260	TAKAYAMA ET AL.	
	Examiner	Art Unit	
	EARL N. TAYLOR	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5,7,8,10-12,14,15,17-19,21-23,25-27 and 29-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,7,8,10-12,14,15,17-19,21-23,25-27,29 and 34-53* is/are rejected.

7)☒ Claim(s) *30-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/19/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 December 2008 has been entered.

Information Disclosure Statement

This office acknowledges receipt of the following items from the applicant: Information Disclosure Statement (IDS) filed on 19 December 2008. The references cited on the PTOL 1449 form have been considered.

Claim Objections

Claims 2, 5, 8, 11, 12, 14, 15, 17-19, 21-23, 25-27 and 29-53 are objected to because of the following informalities:

The claims recite "An article..." and should read --The article...--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 5, 7, 8, 14, 18, 22, 38-40, 50, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1).

Referring to Claims 1, 38 and 50, Fries teaches in Fig. 4 for example, an IC card article comprising: a substrate (3a) having a contact hole (hole filled with electrical connecting elements14); a display device (8) mounted on one side of the substrate (3a); a thin film integrated circuit (5; driving circuitry) equipped on the other side of the substrate; and a sealant (carrier 1 made of covering layer 2 and base layer 4), wherein the display device (8) is electrically connected to the thin film integrated circuit (5) through the contact hole (hole filled with electrical connecting elements14). Fries does not explicitly teach the display device mounted on the substrate by an adhesive agent, wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film

integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Yamazaki teaches in Fig. 2C for example, an active matrix type display device mounted on a substrate (132) by an adhesive agent (131).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an active matrix type display device and couple the active matrix type display device to a with an adhesive taught by Yamazaki in place of the display device of Fries in order to provide a more high-performance display and to securely mount the display device on the substrate of Fries.

Fries in view of Yamazaki do not explicitly teach wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

Kusumoto teaches in Fig. 4 for example, wherein each of the display device and the thin film integrated circuit each comprising TFTs having a polycrystalline semiconductor film (Col. 7, Lines 33-35).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the display device and the thin film integrated circuit of Fries in view of Yamazaki to comprise TFTs having a polycrystalline semiconductor film as taught by Kusmoto such that switching speeds can be achieved due to the advantage of having high mobility (Col. 4, Lines 14-20)

Fries in view of Yamazaki and Kusumoto not explicitly teach wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Barnardo teaches wherein the thin film integrated circuit (6) comprises a memory and a CPU (information storage and microprocessor), and wherein all of the elements including the display device (3), and the thin film integrated circuit are sealed with a sealant (1) so that a portion of the display device (3) is exposed (Col. 2, Lines 50-60).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the memory and CPU taught by Barnardo for the thin film integrated circuit of Fries in view of Yamazaki and Kusumoto as well sealing all of the elements with the sealant allowing the pixel portion of the display device to be exposed as such would protect the components from contaminants, allow the display of text and/or images on the card thus allowing data to be accessed without the use of a card reading machine and reducing the frequency with which a card-user must go to and use a card-reading apparatus.

Referring to Claim 2, Yamazaki teaches wherein the display device is liquid crystal display or a light emitting device (par. 2 and 9).

Referring to Claim 14, Fries teaches wherein the substrate is a printed wiring board.

Referring to Claims 4, 39 and 51, Fries teaches in Fig. 4 for example, an IC card article comprising: a substrate (3a) having a contact hole (hole filled with electrical connecting elements14); a display device (8) mounted on one side of the substrate (3a); a thin film integrated circuit (5; driving circuitry) equipped on the other side of the substrate; and a sealant (carrier 1 made of covering layer 2 and base layer 4), wherein the display device (8) is electrically connected to the thin film integrated circuit (5) through the contact hole (hole filled with electrical connecting elements14). Fries does not explicitly teach the display device mounted on the substrate by an adhesive agent, wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Yamazaki teaches in Fig. 2C for example, an active matrix type display device mounted on a substrate (132) by an adhesive agent (131).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an active matrix type display device and couple the active matrix type display device to a with an adhesive taught by Yamazaki in place of the display device of Fries in order to provide a more high-performance display and to securely mount the display device on the substrate of Fries.

Fries in view of Yamazaki do not explicitly teach wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film,

wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

Kusumoto teaches in Fig. 4 for example, wherein each of the display device and the thin film integrated circuit each comprising TFTs having a polycrystalline semiconductor film (Col. 7, Lines 33-35).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the display device and the thin film integrated circuit of Fries in view of Yamazaki to comprise TFTs having a polycrystalline semiconductor film as taught by Kusmoto such that switching speeds can be achieved due to the advantage of having high mobility (Col. 4, Lines 14-20)

Fries in view of Yamazaki and Kusumoto not explicitly teach wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Barnardo teaches wherein the thin film integrated circuit (6) comprises a memory and a CPU (information storage and microprocessor), and wherein all of the elements including the display device (3), and the thin film integrated circuit are sealed with a sealant (1) so that a portion of the display device (3) is exposed (Col. 2, Lines 50-60).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the memory and CPU taught by Barnardo for

the thin film integrated circuit of Fries in view of Yamazaki and Kusumoto as well sealing all of the elements with the sealant allowing the pixel portion of the display device to be exposed as such would protect the components from contaminants, allow the display of text and/or images on the card thus allowing data to be accessed without the use of a card reading machine and reducing the frequency with which a card-user must go to and use a card-reading apparatus.

Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state wherein the article has a thickness of from 0.05 mm to 1 mm, however, Fries and Barnardo each teach that the IC card is a bank card or credit card for example. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the card having the thickness in the range of 0.05mm to 1mm as such is standard card thicknesses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to Claim 5, Yamazaki further teaches wherein the display device is a liquid crystal display device or a light emitting device.

Referring to Claim 18, Fries further teaches wherein the substrate is a printed wiring board.

Referring to Claims 7, 40 and 52, Fries teaches in Fig. 4 for example, an IC card article comprising: a substrate (3a) having a contact hole (hole filled with electrical connecting elements14); a display device (8) mounted on one side of the substrate (3a);

a thin film integrated circuit (5; driving circuitry) equipped on the other side of the substrate; and a sealant (carrier 1 made of covering layer 2 and base layer 4), wherein the display device (8) is electrically connected to the thin film integrated circuit (5) through the contact hole (hole filled with electrical connecting elements14). Fries does not explicitly teach the display device mounted on the substrate by an adhesive agent, wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Yamazaki teaches in Fig. 2C for example, an active matrix type display device mounted on a substrate (132) by an adhesive agent (131).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an active matrix type display device and couple the active matrix type display device to a with an adhesive taught by Yamazaki in place of the display device of Fries in order to provide a more high-performance display and to securely mount the display device on the substrate of Fries.

Fries in view of Yamazaki do not explicitly teach wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

Kusumoto teaches in Fig. 4 for example, wherein each of the display device and the thin film integrated circuit each comprising TFTs having a polycrystalline semiconductor film (Col. 7, Lines 33-35).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the display device and the thin film integrated circuit of Fries in view of Yamazaki to comprise TFTs having a polycrystalline semiconductor film as taught by Kusmoto such that switching speeds can be achieved due to the advantage of having high mobility (Col. 4, Lines 14-20)

Fries in view of Yamazaki and Kusumoto not explicitly teach wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

However, Barnardo teaches wherein the thin film integrated circuit (6) comprises a memory and a CPU (information storage and microprocessor), and wherein all of the elements including the display device (3), and the thin film integrated circuit are sealed with a sealant (1) so that a portion of the display device (3) is exposed (Col. 2, Lines 50-60).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the memory and CPU taught by Barnardo for the thin film integrated circuit of Fries in view of Yamazaki and Kusumoto as well sealing all of the elements with the sealant allowing the pixel portion of the display device to be exposed as such would protect the components from contaminants, allow the display of

text and/or images on the card thus allowing data to be accessed without the use of a card reading machine and reducing the frequency with which a card-user must go to and use a card-reading apparatus.

Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state wherein the article has a thickness of from 0.05 mm to 1 mm, however, Fries and Barnardo each teach that the IC card is a bank card or credit card for example. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the card having the thickness in the range of 0.05mm to 1mm as such is standard card thicknesses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to Claim 8, Yamazaki further teaches wherein the display device is a liquid crystal display device or a light emitting device.

Referring to Claim 22, Fries further teaches wherein the substrate is a printed wiring board.

Claims 15, 19, 23 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Oh et al. (U.S. Patent 6,061,246).

Referring to Claims 15, 19 and 23, Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state wherein the printed wiring board is selected from the group consisting of a ceramic substrate, a glass epoxy substrate and a polyimide substrate. However, Oh teaches in Fig. 3 for example the standard material of glass ceramic substrates having a polyimide intermediary substrate for the wiring board of a LCD panel (110) and driving IC (130). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the known conventional materials of ceramic, glass and polyimide as taught by Oh to form the wiring board of Fries in view of Yamazaki, Kusumoto and Barnardo, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Referring to Claims 42-44, Fries in view of Yamazaki, Kusumoto, Barnardo and Oh do not explicitly teach wherein the substrate comprises a material having a thermal conductivity of from 2 W/mK to 30 W/mK. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made in light of the material teachings in view of Oh to optimize the thermal conductivity of the substrate to be from 2 W/mK to 30 W/mK, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claims 17, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Suga et al. (U.S. Patent 6,321,067).

Referring to Claims 17, 21 and 25, Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state the article further comprises a plurality of antenna coils. However, Suga teaches, in Fig. 13 for example, an IC card having a plurality of antenna coils. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the plurality antenna coils taught by Suga in the IC card of Fries in view of Yamazaki, Kusumoto and Barnardo in order to provide communication (transmission and reception) of information of high reliability between a reader/writer and the IC card (Col. 7, Lines 25-31).

Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Yamazaki et al. (U.S. Patent Application Publication 2001/0038098 A1).

Referring to Claims 34-36, Fries in view of Yamazaki ('256), Kusumoto and Barnardo do not explicitly state wherein the display device has at least QVGA of resolution. However, Yamazaki ('098) teaches an active matrix light emitting element

having a highly minute display having based on pixels whose number is over QVGA (par. 9) and also teaches in Fig. 14B, 14D, 14F, 14G and 14H for example devices having a small display. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide at least QVGA resolution as taught by Yamazaki ('098) for the IC card of Fries in view of Yamazaki ('256), Kusumoto and Barnardo to provide clear text and images thus improving the aesthetics of the user interface.

Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Yoneya et al. (JP 59022961 A).

Referring to Claims 46-48, Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state wherein the adhesive agent is mixed with powder comprising silver, nickel, aluminum, or aluminum nitride, or filler. However, Yoneya teaches an adhesive with an aluminum nitride powder. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate aluminum nitride powder as taught by Yoneya in the adhesive resin of Fries in view of Yamazaki, Kusumoto and Barnardo thus providing an adhesive resistant to repeated heating and cooling as well as humidity, with excellent thermal conductivity, electrical insulation and heat resistance (abstract).

Claims 10-12, 26, 41 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Scheuerlein et al. U.S. Patent Application Publication 2002/0163834 A1)

Referring to Claims 10, 41 and 53, Fries teaches in Fig. 4 for example, an IC card article comprising: a substrate (3a) having a contact hole (hole filled with electrical connecting elements14); a display device (8) mounted on one side of the substrate (3a); a thin film integrated circuit (5; driving circuitry) equipped on the other side of the substrate; and a sealant (carrier 1 made of covering layer 2 and base layer 4), wherein the display device (8) is electrically connected to the thin film integrated circuit (5) through the contact hole (hole filled with electrical connecting elements14). Fries does not explicitly teach the display device mounted on the substrate by an adhesive agent, wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed; and does not explicitly teach wherein the thin film integrated circuit comprises a plurality of thin film integrated circuits that are laminated.

However, Yamazaki teaches in Fig. 2C for example, an active matrix type display device mounted on a substrate (132) by an adhesive agent (131).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an active matrix type display device and couple the active matrix type display device to a with an adhesive taught by Yamazaki in place of the display device of Fries in order to provide a more high-performance display and to securely mount the display device on the substrate of Fries.

Fries in view of Yamazaki do not explicitly teach wherein each of the display device and the thin film integrated circuit have a polycrystalline semiconductor film, wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

Kusumoto teaches in Fig. 4 for example, wherein each of the display device and the thin film integrated circuit each comprising TFTs having a polycrystalline semiconductor film (Col. 7, Lines 33-35).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the display device and the thin film integrated circuit of Fries in view of Yamazaki to comprise TFTs having a polycrystalline semiconductor film as taught by Kusmoto such that switching speeds can be achieved due to the advantage of having high mobility (Col. 4, Lines 14-20)

Fries in view of Yamazaki and Kusumoto not explicitly teach wherein the thin film integrated circuit comprises a memory and a CPU, and wherein substrate, the display

device, and the thin film integrated circuit are sealed with a sealant so that a portion of the display device is exposed.

Barnardo teaches wherein the thin film integrated circuit (6) comprises a memory and a CPU (information storage and microprocessor), and wherein all of the elements including the display device (3), and the thin film integrated circuit are sealed with a sealant (1) so that a portion of the display device (3) is exposed (Col. 2, Lines 50-60).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the memory and CPU taught by Barnardo for the thin film integrated circuit of Fries in view of Yamazaki and Kusumoto as well sealing all of the elements with the sealant allowing the pixel portion of the display device to be exposed as such would protect the components from contaminants, allow the display of text and/or images on the card thus allowing data to be accessed without the use of a card reading machine and reducing the frequency with which a card-user must go to and use a card-reading apparatus.

Fries in view of Yamazaki, Kusumoto and Barnardo do not explicitly state wherein the thin film integrated circuit comprises a plurality of thin film integrated circuits that are laminated.

Scheuerlein teaches stacking (laminating) a plurality of thin film integrated circuits (par. 22).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to laminate a plurality of thin film integrated circuits in

order to integrate the driving circuitry, memory and CPU (logic) such that lateral substrate real estate is conserved thus having a smaller footprint.

Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein do not explicitly state wherein the article has a thickness of from 0.05 mm to 1 mm, however, Fries and Barnardo each teach that the IC card is a bank card or credit card for example. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the card having the thickness in the range of 0.05mm to 1mm as such is standard card thicknesses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to Claim 11, Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein do not explicitly teach wherein thicknesses of the plurality of thin film integrated circuits are each from 1 um to 5 um. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the thicknesses of the thin film integrated circuits such that are each from 1 um to 5 um, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to Claim 12, Yamazaki further teaches wherein the display device is a liquid crystal display device or a light emitting device.

Referring to Claim 26, Fries further teaches wherein the substrate is a printed wiring board.

Claims 27 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Scheuerlein et al. U.S. Patent Application Publication 2002/0163834 A1) in further view of Oh et al. (U.S. Patent 6,061,246).

Referring to Claim 27, Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein do not explicitly state wherein the printed wiring board is selected from the group consisting of a ceramic substrate, a glass epoxy substrate and a polyimide substrate. However, Oh teaches in Fig. 3 for example the standard material of glass ceramic substrates having a polyimide intermediary substrate for the wiring board of a LCD panel (110) and driving IC (130). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the known conventional materials of ceramic, glass and polyimide as taught by Oh to form the wiring board of Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Referring to Claim 45, Fries in view of Yamazaki, Kusumoto, Barnardo, Scheuerlein and Oh do not explicitly teach wherein the substrate comprises a material having a thermal conductivity of from 2 W/mK to 30 W/mK. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made in light of the material teachings in view of Oh to optimize the thermal conductivity of the substrate to be from 2 W/mK to 30 W/mK, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Scheuerlein et al. U.S. Patent Application Publication 2002/0163834 A1) in further view of Suga et al. (U.S. Patent 6,321,067).

Referring to Claim 29, Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein do not explicitly state the article further comprises a plurality of antenna coils. However, Suga teaches, in Fig. 13 for example, an IC card having a plurality of antenna coils. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the plurality antenna coils taught by Suga in the IC card of Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein

in order to provide communication (transmission and reception) of information of high reliability between a reader/writer and the IC card (Col. 7, Lines 25-31).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Scheuerlein et al. U.S. Patent Application Publication 2002/0163834 A1) in further view of Yamazaki et al. (U.S. Patent Application Publication 2001/0038098 A1).

Referring to Claim 37, Fries in view of Yamazaki ('256), Kusumoto, Barnardo and Scheuerlein do not explicitly state wherein the display device has at least QVGA of resolution. However, Yamazaki ('098) teaches an active matrix light emitting element having a highly minute display having based on pixels whose number is over QVGA (par. 9) and also teaches in Fig. 14B, 14D, 14F, 14G and 14H for example devices having a small display. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide at least QVGA resolution as taught by Yamazaki ('098) for the IC card of Fries in view of Yamazaki ('256), Kusumoto, Barnardo and Scheuerlein to provide clear text and images thus improving the aesthetics of the user interface.

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fries et al. (U.S. Patent 6,414,441 B1) in view of Yamazaki (U.S. Patent Application

Publication 2001/0015256 A1) in further view of Kusumoto (U.S. Patent 5,567,967) in further view of Barnardo (U.S. Patent 6,360,954 B1) in further view of Scheuerlein et al. U.S. Patent Application Publication 2002/0163834 A1) in further view of Yoneya et al. (JP 59022961 A).

Referring to Claim 49, Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein do not explicitly state wherein the adhesive agent is mixed with powder comprising silver, nickel, aluminum, or aluminum nitride, or filler. However, Yoneya teaches an adhesive with an aluminum nitride powder. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate aluminum nitride powder as taught by Yoneya in the adhesive resin of Fries in view of Yamazaki, Kusumoto, Barnardo and Scheuerlein thus providing an adhesive resistant to repeated heating and cooling as well as humidity, with excellent thermal conductivity, electrical insulation and heat resistance (abstract).

Allowable Subject Matter

Claims 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Telephone / Fax Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Earl N. Taylor whose telephone number is (571) 272-8894. The examiner can normally be reached on Monday-Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Examiner: Earl N. Taylor

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